

SECTION EDITOR: GRACE S. ROZYCKI, MD

## Image of the Month

Shawn D. St Peter, MD; Kevin O. Leslie, MD; Jacques P. Heppell, MD

**A** 77-YEAR-OLD MAN PRESENTED AFTER 3 days of diffuse abdominal pain, anorexia, and nausea. Four years before admission, he underwent an abdominoperineal resection for rectal cancer and was since admitted twice with episodes of partial small-bowel obstruction that resolved with conservative measures. Recently, he had developed and was treated for a urinary tract infection. In addition to his abdominal pain, he had profuse, watery stomal output. Although he was

afebrile, his white blood cell count was  $50.7 \times 10^3/\mu\text{L}$ . His abdomen was diffusely tender to deep palpation, but he exhibited no guarding or peritoneal signs. A computed tomographic scan of the abdomen showed a diffusely edematous bowel with ascites (**Figure 1**) and portal venous air (**Figure 2**).

### What Is the Diagnosis?

- A. Acute mesenteric venous thrombosis
- B. Ischemic colitis
- C. Pseudomembranous enterocolitis
- D. Inflammatory bowel disease

*From the Departments of Surgery (Drs St Peter and Heppell) and Pathology (Dr Leslie), Mayo Clinic, Scottsdale, Ariz.*

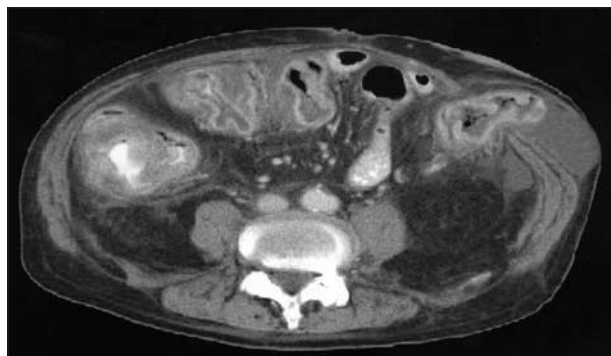


Figure 1.



Figure 2.

# Answer

## Pseudomembranous Enterocolitis

**Figure 1.** Computed tomographic scan of the abdomen shows diffusely edematous bowel, hyperemic mucosa, and ascites.

**Figure 2.** Computed tomographic scan of the abdomen shows portal venous air.

**C**lostridium difficile is a gram-positive obligate anaerobe that produces 2 toxins: an enterotoxin (toxin A) and a cytotoxin (toxin B). Animal studies<sup>1</sup> demonstrate that both toxins are necessary for the clinical picture of antibiotic-associated colitis.

The presentation varies from an asymptomatic person who is a carrier to the patient with fulminate colitis. Clostridium difficile exists in an asymptomatic carrier state in approximately 3% of adults without evidence of toxin production.<sup>2</sup>

The possible causes for C difficile colitis include antibiotic therapy, human immunodeficiency virus infection, candidiasis, malignancy, chemotherapy, malnutrition, intestinal obstruction, decubitus ulcer, renal failure, and interventional procedures.<sup>3</sup> The stool assay for cytotoxin is the most accurate method of diagnosis and has a sensitivity of 67% to 100% and a specificity of more than 85%.<sup>4</sup> Because the assay results are not known for a few days, some authors suggest that endoscopy is more rapid and effective in establishing the diagnosis by its ability to demonstrate thick exudative plaques known as pseudomembranes.<sup>5</sup> Findings on the computed tomographic scan include bowel wall thickening (>4 mm) and the presence of wall nodularity, fat stranding, or unexplained ascites. These findings have been reported to have a positive predictive value of 88%.<sup>6</sup>

The unique feature of our case was the distinctive pattern of portal venous gas identified on computed to-

mography of the abdomen, and a colectomy with ileostomy was performed.

Corresponding author: Jacques P. Heppell, MD, Department of Surgery, Mayo Clinic, 13400 E Shea Blvd, Scottsdale, AZ 85259 (e-mail: heppell.jacques@mayo.edu).

### REFERENCES

1. Libby JM, Jortner BS, Wilkins TD. Effects of the two toxins of *Clostridium difficile* in antibiotic-associated cecitis in hamsters. *Infect Immun*. 1982;36:822-829.
2. George WL, Sutter VL, Finegold SM. Toxigenicity and antimicrobial susceptibility of *Clostridium difficile*, a cause of antimicrobial agent-associated colitis. *Curr Microbiol*. 1978;1:55-58.
3. Buchner AM, Sonnenberg A. Medical diagnoses and procedures associated with *Clostridium difficile* colitis. *Am J Gastroenterol*. 2001;96:766-772.
4. Marts BC, Longo WE, Venava AM, Kennedy DJ, Daniel GL, Jones I. Patterns and prognosis of *Clostridium difficile* colitis. *Dis Colon Rectum*. 1994;37:837-845.
5. Fekety R, American College of Gastroenterology, Practice Parameters Committee. Guidelines for the diagnosis and management of *Clostridium difficile*-associated diarrhea and colitis. *Am J Gastroenterol*. 1997;92:739-750.
6. Kirkpatrick ID, Greenberg HM. Evaluating the CT diagnosis of *Clostridium difficile* colitis: should CT guide therapy? *AJR Am J Roentgenol*. 2001;176:635-639.

### Submissions

Due to the overwhelmingly positive response to the "Image of the Month," the *Archives of Surgery* has temporarily discontinued accepting submissions for this feature. It is anticipated that requests for submissions will resume in mid 2004. Thank you.